



**Review of Duke Energy Carolinas, LLC  
Application for Approval of Rider 13  
Docket Number 2021-76-E**

South Carolina  
Office of Regulatory Staff

May 14, 2021

## Executive Summary

In Duke Energy Carolinas, LLC's ("Company" or "DEC") Application for Approval of Rider 13 ("Application" or "Rider 13"), the Company is seeking recovery of \$80,028,532 with \$37,734,625 (or 47%) attributed to residential customers and \$42,293,907 (or 53%) attributed to non-residential customers to cover the revenue requirements of Rider 13. This report details the Office of Regulatory Staff's ("ORS") findings and recommendations based on its review of the Company's Application, programs, and cost recovery mechanism. Based on its review, ORS recommends the following:

- The non-residential EnergyWise for Business ("EWfB") and non-residential Information Technology Energy Efficient ("ITEE") Programs have not passed cost effectiveness testing and ORS recommends the Company monitor these programs closely and incorporate the necessary changes to improve their cost-effectiveness.

Apart from the EWfB and ITEE programs, ORS finds that the programs continue to perform well. Realized cumulative energy savings have exceeded the anticipated energy savings by twenty-three percent (23%), and although the number of non-residential opt-outs increased slightly, the Company continues to work directly with large non-residential customers in an effort to entice those customers to participate. Although the COVID-19 pandemic created challenges for customer contact and on-site visits in 2020, the Company made adjustments to accommodate the limitations. ORS finds the updated Demand Side Management and Energy Efficiency ("DSM/EE") Rate Riders were developed in accordance with the terms and conditions set forth by the Public Service Commission of South Carolina ("Commission") and are based on reasonable estimates of participation in the Company's DSM/EE programs.

The current Rider 12 rates approved for 2021 and the Rider 13 rates proposed for 2022 are shown in Table 1 below.

**Table 1: Comparison of Current and Requested Rates**

<u>DSM/EE Rider</u>	<u>Approved Rider 12 Rate</u> (¢/kWh)	<u>Requested Rider 13 Rate</u> (¢/kWh)	<u>Change to Rider 12 Rate</u> (¢/kWh)
Residential	0.6878	0.5769	-0.1109
Non-Residential	0.6788	0.7705	0.0917

## Introduction

The original DEC DSM/EE programs (Vintages One through Four) were filed under DEC's Save-A-Watt ("SAW") cost recovery methodology. In Docket No. 2013-298-E, Order No. 2013-889, the Commission approved the Revised Settlement Agreement ("Settlement") which stipulated, among other negotiated items, the approval of DEC's application for a new cost recovery mechanism and a revised portfolio of DSM/EE programs. The revised cost recovery model allows the Company to recover (1) all reasonable and prudent costs incurred for the adoption and implementation of new DSM/EE programs; (2) net lost revenues ("NLR") associated with a particular vintage of EE programs for a maximum of three (3) years or the life of the measure; and (3) an earned Program Portfolio Incentive ("PPI") equal to 11.5% of the net benefits achieved through the programs.

On July 22, 2020, the Company filed an application for a further revised cost recovery mechanism, which was approved with minor modifications by the Commission in Order No. 2021-32. The primary revision was to reduce the Company's PPI from 11.5% of net benefits to 10.6% of net benefits and to add an additional Program Return Incentive ("PRI") to apply only to those programs that are not projected to be cost effective at the time of Commission approval and are generally intended to serve low-income customers. The PRI was set to 10.6% of the gross program expenditures for the low-income programs, with limitations on the margins produced. The further revised cost recovery mechanism begins with Vintage 2022.

On March 2, 2021, the Company filed The Application for approval of Rider 13 in Docket No. 2021-76-E. Rider 13 consists of prospective amounts for Vintages 2021 and 2022 along with true-up components and recovery of lost revenues under previous vintages, namely Vintages 2017, 2018, 2019 and 2020. The Rider 13 billing factors will apply to the billing period January 1, 2022 through December 31, 2022.

The Company's cost recovery mechanism identifies vintages by calendar year. The Vintage 2022 period is the calendar year 2022 and costs for measures projected to be installed in that year are to be recovered under Rider 13. Table 2 below summarizes the program years for each of the vintages.

**Table 2: Vintage Program Years**

<u>Program Year/Rider</u>	<u>Beginning Date</u>	<u>Ending Date</u>	<u>Vintage Number</u>
1	February 1, 2010	December 31, 2010	SAW -Vintage 1
2	January 1, 2011	December 31, 2011	SAW -Vintage 2
3	January 1, 2012	December 31, 2012	SAW -Vintage 3
4	January 1, 2013	December 31, 2013	SAW -Vintage 4
5	January 1, 2014	December 31, 2014	Vintage 2014
6	January 1, 2015	December 31, 2015	Vintage 2015
7	January 1, 2016	December 31, 2016	Vintage 2016
8	January 1, 2017	December 31, 2017	Vintage 2017
9	January 1, 2018	December 31, 2018	Vintage 2018
10	January 1, 2019	December 31, 2019	Vintage 2019
11	January 1, 2020	December 31, 2020	Vintage 2020
12	January 1, 2021	December 31, 2021	Vintage 2021
13	January 1, 2022	December 31, 2022	Vintage 2022

## DSM/EE Programs

The Company's filing includes requests for cost recovery encompassing twenty-one (21) DSM/EE programs. The Company's actual costs were audited for the period January 1, 2020 through December 31, 2020 ("Vintage Year 2020"). ORS also reviewed the Company's cost projections for the period January 1, 2022 through December 31, 2022 ("Forecast Vintage Year 2022").

Table 3 below shows the actual DSM/EE Program Energy Savings, Incentive Program Costs<sup>1</sup> and Non-Incentive Program Costs<sup>2</sup> for Vintage years 2014 through 2021.

**Table 3: DSM/EE Energy Savings, Incentive Program Costs, and Non-Incentive Program Costs**

<u>Vintage Program Years</u>	<u>Net MWh Savings</u>	<u>Incentive Program Costs</u>	<u>Non-Incentive Program Costs</u>
2014	540,323	\$50,578,537	\$38,884,186
2015	652,973	\$69,012,103	\$40,937,094
2016	801,779	\$106,486,823	\$44,891,711
2017	934,676	\$141,808,439	\$50,251,514
2018	886,669	\$110,814,347	\$47,754,998
2019	858,046	\$102,640,586	\$46,787,757
2020	650,226	\$67,807,173	\$42,913,389
2021	760,219 <sup>3</sup>	\$82,325,493	\$61,015,517

<sup>1</sup> Incentive Program Costs are the costs the utility pays to customers who participate in the DSM/EE programs.

<sup>2</sup> Non-Incentive Program Costs are the costs (administrative, marketing, evaluation, measurement and verification etc.) the utility incurs to implement the DSM/EE programs.

<sup>3</sup> Estimated value pre-EM&V.

Chart 1 below illustrates the fluctuation of the DSM/EE Program energy savings and the associated Incentive Program Costs for Vintage years 2014 through 2021.

**Chart 1: DSM/EE Energy Savings and Incentive Program Costs for Vintage Years 2014 – 2021**

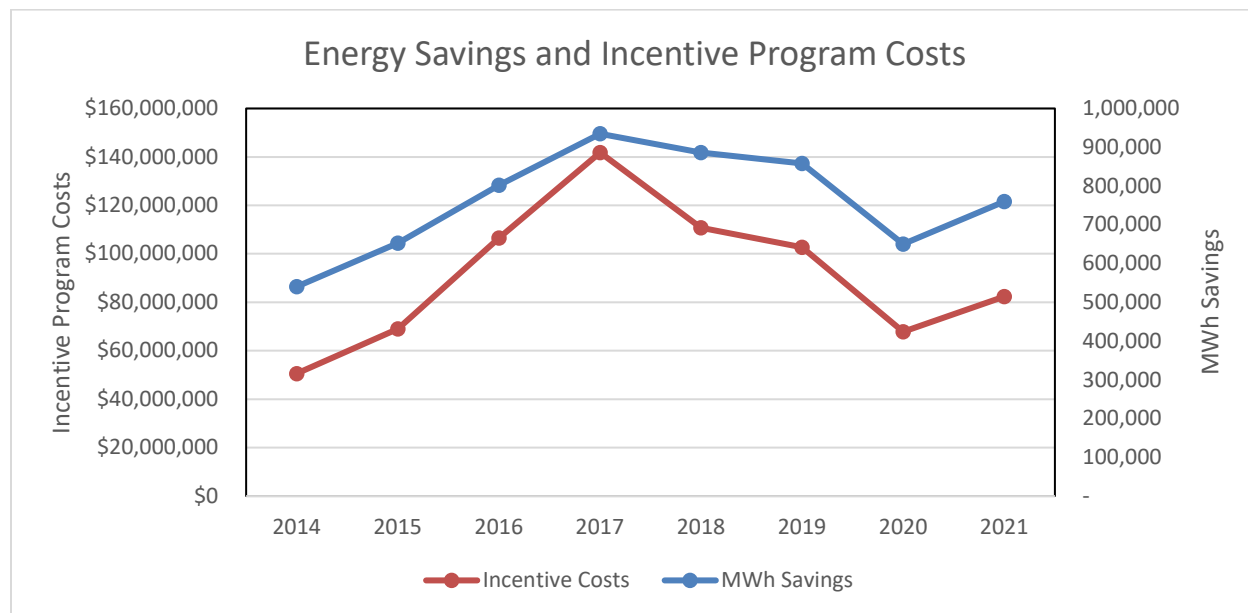


Chart 2 below illustrates the fluctuation of the DSM/EE Program energy savings and the associated Non-Incentive Program Costs for Vintage years 2014 through 2021.

**Chart 2: DSM/EE Energy Savings and Non-Incentive Program Costs for Vintage Years 2014 – 2021**

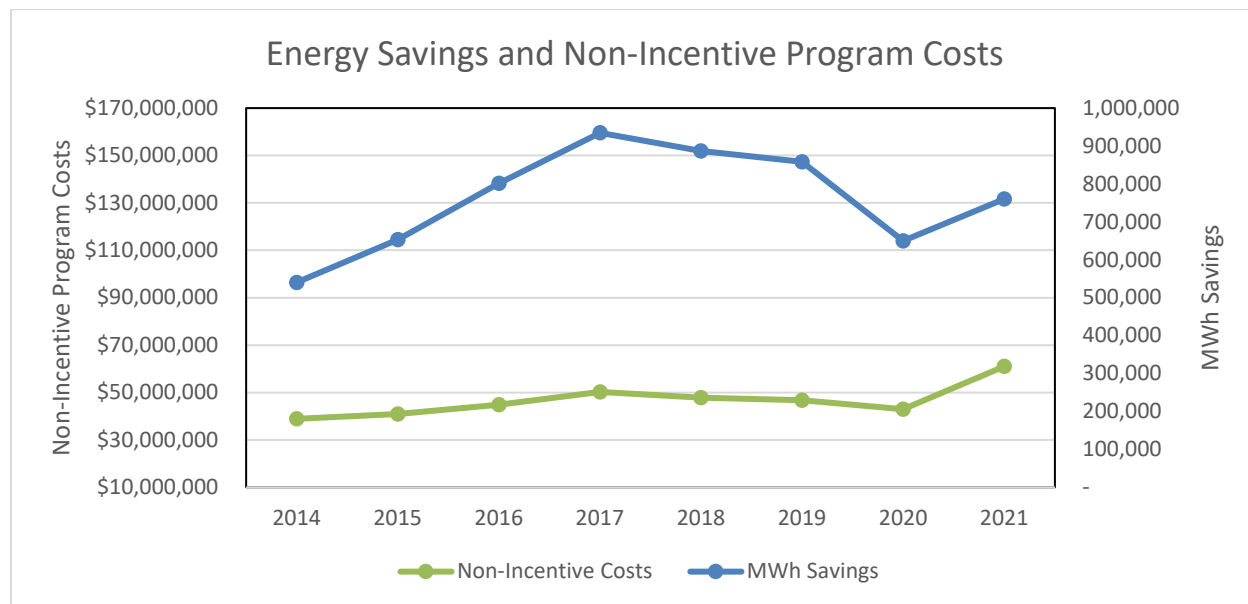
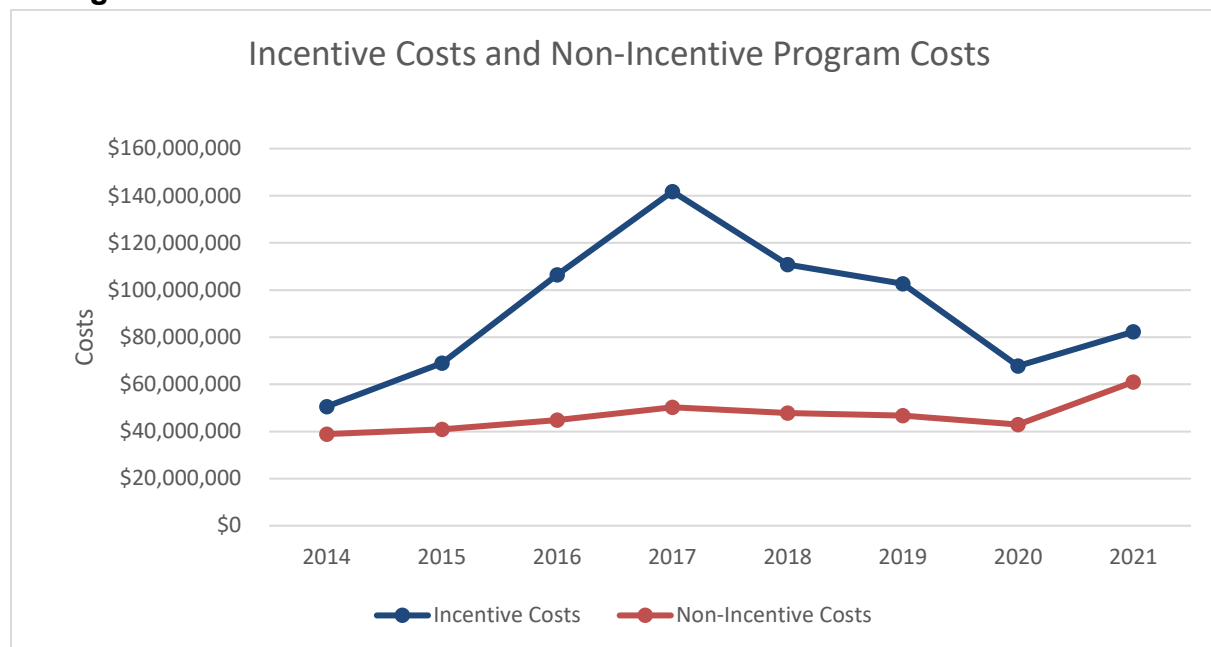


Chart 3 below illustrates the fluctuation of the DSM/EE Program Incentive Costs and the associated Non-Incentive Program Costs for Vintage years 2014 through 2021.

**Chart 3: DSM/EE Program Incentive Costs and Non-Incentive Program Costs for Vintage Years 2014 – 2021**



For two (2) programs included in Vintage 2022, namely the non-residential EWfB Program and non-residential ITEE Program<sup>4</sup> costs are projected to exceed benefits, according to the Company's Utility Cost Test ("UCT") results (i.e., the UCT scores are less than 1.0). In fact, costs have exceeded benefits for several years for these two (2) programs.

The EWfB Program failed the UCT for Vintage Years 2019 through 2022. Given the program's struggle with cost-effectiveness and the Company's change from a summer peaking utility to a mostly winter peaking utility, the Company is placing the program in maintenance mode, i.e., the Company will no longer seek new customers for this program. The Company projects that program benefits will only be 61% of program costs in 2022.

The ITEE Program failed the UCT for Vintage Years 2017 through 2022. The Company faults the high cost of implementation and equipment combined with low rates of participation for the failed UCT scores. The Company continues to review the ITEE offering to identify changes in implementation and equipment costs, as well as investigate new measures to include in the ITEE program to improve the program's UCT score. For

<sup>4</sup> The ITEE Program is not a standalone program, but a subset of the Smart Saver Prescriptive Program. ITEE performance is tracked separately due to the unique nature of the projects it includes.

Vintage Year 2021, the Company projects that program benefits will only be 63% of program costs.

Chart 4 below shows the graphical representation of the UCT for the EWfB and ITEE Programs for vintage years 2017 through 2022.

**Chart 4: EWfB & ITEE Programs' UCT Scores for Vintage Years 2017 - 2021**

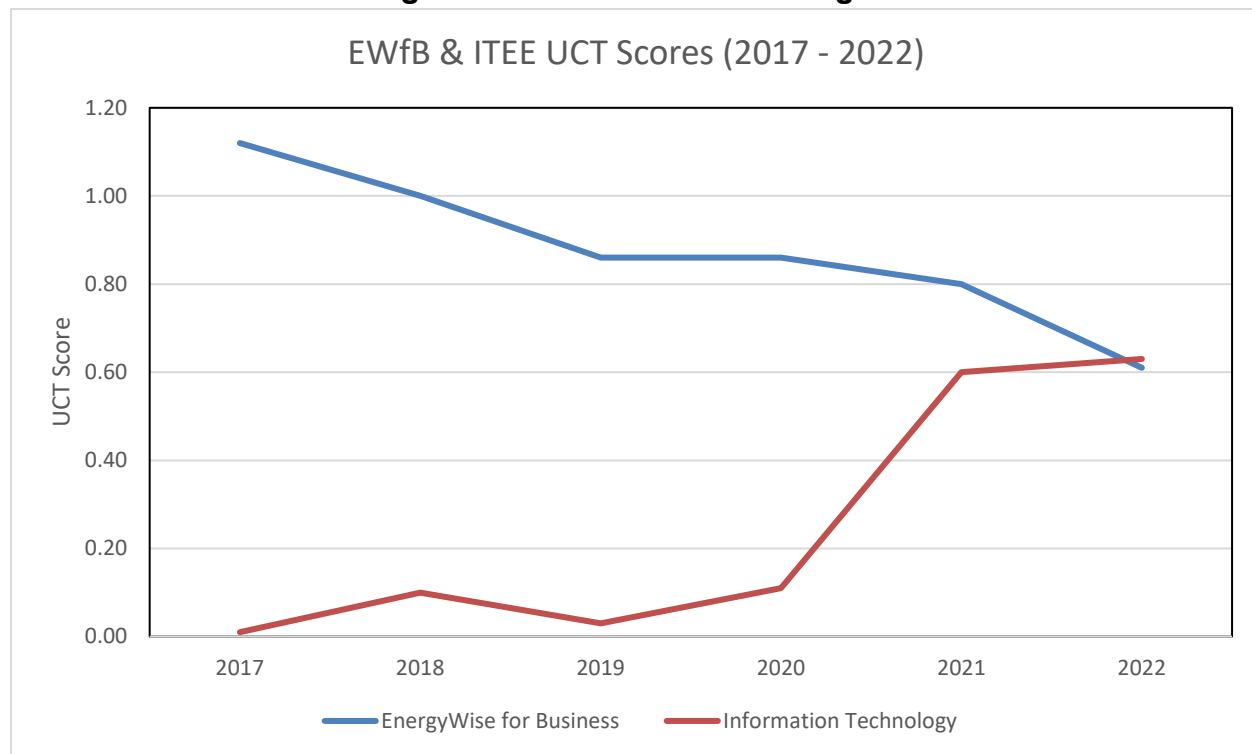


Table 4 below shows program costs expressed in cents per kilowatt-hour (“kWh”) saved or dollars per kilowatt (“kW”) saved for the Vintage 2022 projected participation of each program.

**Table 4: Program Costs**

<b><u>Residential Programs</u></b>	<b><u>¢/kWh</u></b>
Energy Efficiency Education	3.7
Energy Assessments	2.8
My Home Energy Report	3.7
Energy Efficient Appliances and Devices	1.8
HVAC Energy Efficiency	6.2
Income Qualified Energy Efficiency and Weatherization Assistance	7.7
Multi-Family Energy Efficiency	1.6
Power Manager	\$24.01/kW
<b><u>Commercial and Industrial Programs</u></b>	<b><u>¢/kWh</u></b>
Smart Saver Custom Technical Assessments	2.0
Smart Saver Custom	1.5
Smart Saver Energy Efficient Food Service Products	1.5
Smart Saver Energy Efficient HVAC Products	1.5
Smart Saver Energy Efficient Lighting Products	1.2
Energy Efficient Pumps and Drives	1.5
Energy Efficient ITEE	4.2
Energy Efficient Process Equipment Products	1.9
Smart Saver Performance Incentive	2.3
Small Business Energy Saver	1.5
EnergyWise for Business	\$262.16/kW
Power Share	\$40.21/kW
Power Share Call Option	\$63.98/kW*

\*The cost shown for the Power Share Call Option program is a 2015 value.

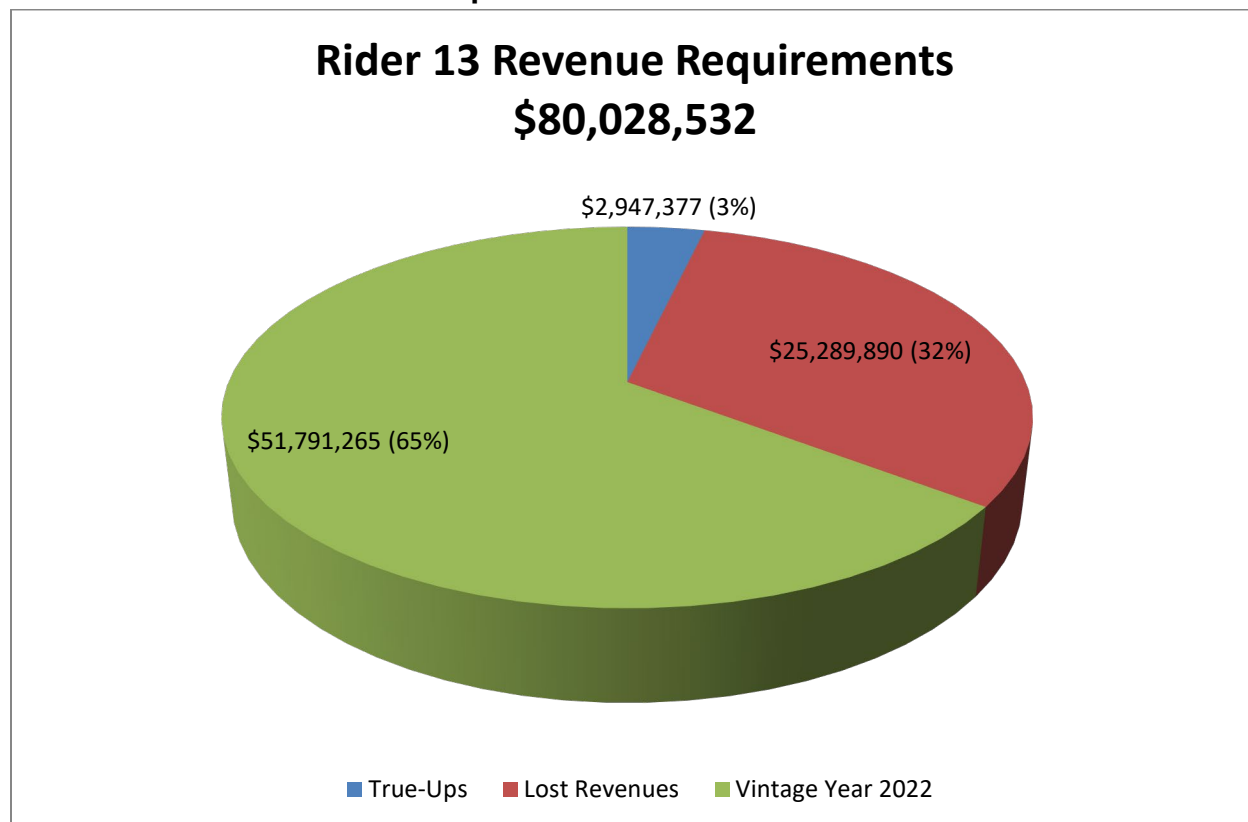


The Company reports that realized cumulative energy savings of the Company's portfolio through the end of calendar year 2020 exceeded the anticipated energy savings by approximately twenty-three percent (23%), and cumulative peak demand savings through 2020 from DSM programs reached ninety percent (90%) of forecasted savings. Both the energy savings and demand savings are lower than in previous years. The decrease is mainly due to the impacts of the COVID-19 pandemic. The higher than forecasted energy savings have been driven by higher than projected energy savings in the residential Energy Efficient Appliances and Devices Program and the non-residential Energy Efficient Lighting Products Program.

## Program Cost Evaluation

In DEC's Application, the Company is seeking recovery of \$37,734,625 (or 47%) from residential customers and \$42,293,907 (or 53%) from non-residential customers to cover the revenue requirements of Rider 13 for a grand total of \$80,028,532. A breakdown of the components of the total revenue requirement is shown below in Chart 5.

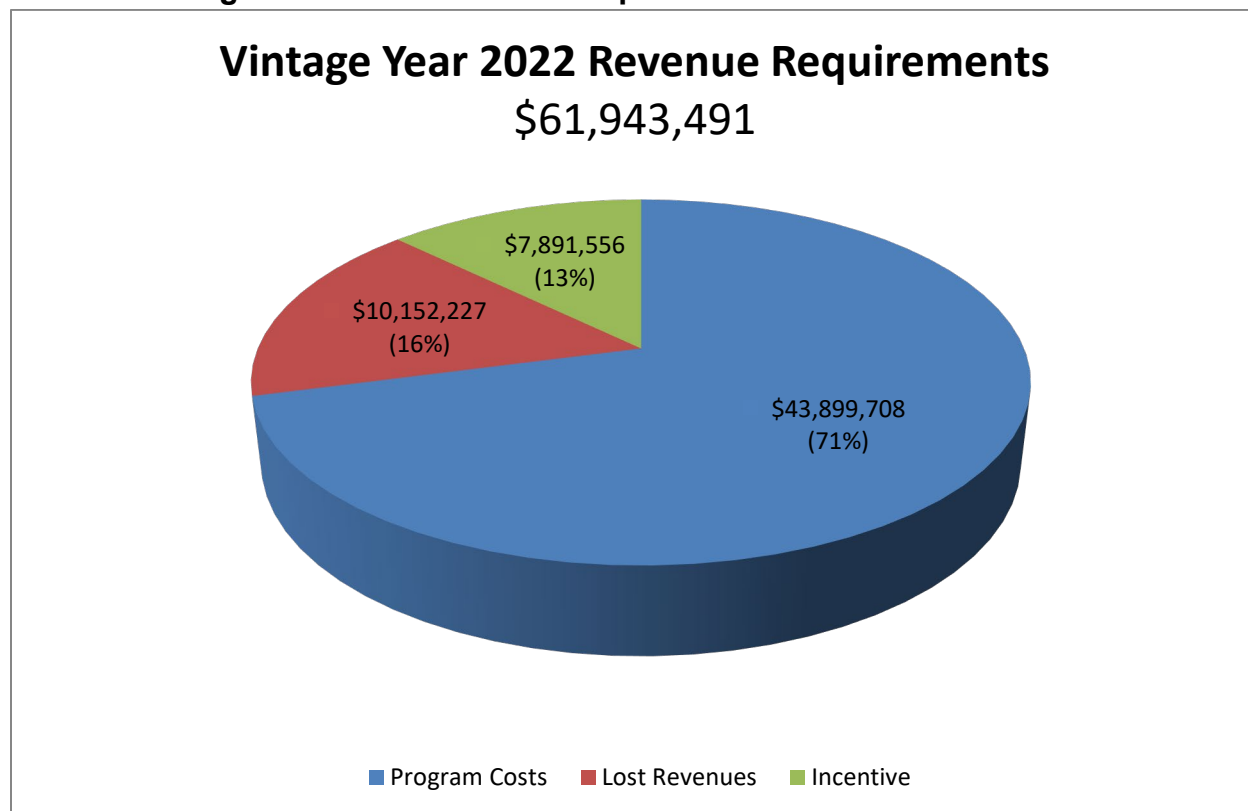
**Chart 5: Rider 13 Revenue Requirements**



A line-by-line breakout of the major cost components of the Rider 13 filing and the development of the billing factors is shown in Exhibit 1. The requested revenues from residential customers are recovered from all residential customers, while the non-

residential revenues are recovered from the non-residential customers that take electric service on an eligible rate schedule that do not opt-out of the DSM/EE Rider. The cost components of Vintage Year 2022, the largest portion of Rider 13, are illustrated below in Chart 6.

**Chart 6: Vintage Year 2022 Revenue Requirements**



For the Company's Vintage 2022 EE programs, the average lifetime cost of each kWh saved is estimated by the Company to be 1.8 cents. The average lifetime cost of the demand savings for the Company's Vintage 2022 DSM programs is estimated to be \$34.51 per kW. These results compare favorably with the costs of supply-side generation.

## Advisory Group

The DEC Collaborative Group ("Carolinas Collaborative"), the Company's advisory group concerning DSM/EE matters, meets every other month to discuss the status of each program, including preliminary participation statistics, Evaluation, Measurement and Verification ("EM&V") plans and preliminary EM&V data. The Carolinas Collaborative consists of members from both North Carolina and South Carolina representing all customer classes and a variety of governmental, environmental, and commercial interests. The Carolinas Collaborative met in 2020 on January 10, March 19, May 15, July 23, September 30, and November 5. During the meetings, the Company shared program updates along with program challenges resulting from the COVID-19 pandemic, target

audience strategies that are employed to make the DSM/EE programs a success, and provided an opportunity for members to participate in discussions on new program ideas and how they can impact participation among the various sectors.

In addition, the Company shared the Winter Peaking Study updates. The preliminary report of the study showed that residential customers represents approximately 53% of the total system winter peak demand of which space heating contributes to approximately 70% of the total peak demand. As a result, the Company implemented a targeted approach to design programs that will assist customers in saving energy during winter peak periods. The results of the study will continue to inform EE savings potential and Demand Response forecast.

## **Evaluation, Measurement & Verification**

Information from the following EM&V reports was utilized for the Rider 13 filing:

- Save Energy and Water Kits 2018-2019 Evaluation Report
- EM&V Report for the Duke Energy Multifamily Energy Efficiency Program
- Non-Residential Smart Saver Prescriptive Program Evaluation Report

## **Estimates Used in the Filing**

All prospective portions of Rider 13 (pertaining to amounts associated with years 2021 and 2022) are estimates. These estimated values were derived from the DSMore™ computer model. ORS tested and reviewed the DSMore™ model and finds it suitable for this purpose.

## **Forecasted Retail Sales**

The Company utilized its fall 2020 forecast of retail sales, adjusted for non-residential opt-outs, to develop the Rider 13 rates. ORS finds this to be a reasonable approach to establish rates.

## **Existing DSM Programs**

Prior to the implementation of the SAW programs, the Company used the North Carolina and South Carolina Interruptible Service (“IS”) and Standby Generation (“SG”) programs – Rider IS and Rider SG (“Existing DSM Programs”) – for Demand Side Management. Although DEC is working to move the Existing DSM Programs’ customers to the new programs, some customers continue to take service under the Existing DSM Programs. The rate recovery for the Existing DSM Programs, which is based on the recovery of incentives paid, is computed separately from the SAW programs and the revised portfolio of programs. In the Rider 13 filing, the rate recovery for the Existing DSM Programs is included in the prospective portion of Rider 13.

ORS verified that program costs, avoided costs and lost revenues associated with the Company's IS and SG programs have been excluded from the Company's incentive program, that the program costs associated with the Company's Existing DSM Programs are being recovered as a separate component of Rider EE, and that the recovery of the cost of these programs is consistent with the Company's approved tariff. The total cost of the Existing DSM Programs included in Rider 13 is \$911,560.

## **Avoided Costs**

ORS verified that the avoided energy and capacity costs calculations for Vintages 2014 through 2018 are based on the avoided energy cost rates and avoided capacity cost rates that were approved in Docket No. 2013-298-E. The avoided transmission and distribution ("T&D") costs are based on avoided T&D cost rates developed in a study completed during 2014. However, for Vintages 2019, 2020, 2021, and 2022, the Company found that the avoided energy and capacity cost rates had changed by more than 25% and updated those rates accordingly. Due to this significant downward adjustment in the avoided energy and capacity cost rates, the Company has made and is considering additional modifications to the DSM/EE programs to ensure that the programs remain cost effective.

## **Energy and Peak Demand Savings**

The Company projects that the measures installed in Vintage 2022 will reduce electric usage over the lifetimes of the installed measures by more than 6,797,062 megawatt hours and will provide the capability to reduce the annual one-hour peak usage by 939 megawatts. These savings may provide DEC the ability to avoid or defer the construction of additional generating facilities.

## **Opt-Outs**

Under the original SAW programs, industrial customers classified as manufacturing industries that utilized at least 50% of electrical usage for manufacturing could opt-out of the Company's programs. Each eligible customer could opt-out of the EE programs, the DSM programs, or both sets of programs. Under the revised cost recovery mechanism and portfolio of programs (Vintage 2014 and forward), the ability to opt-out was expanded to include non-residential customers that are classified as manufacturing industries or that have an annual consumption of 1,000,000 kWh or greater in the billing months of the prior calendar year and have implemented cost-effective energy efficiency measures. The number of non-residential customers electing to opt-out of the EE programs has increased from 67% in Vintage Year 2014 (based on energy utilization) to 72% in Vintage Year 2020. For the DSM programs, the customers opting out has increased from 60% in Vintage Year 2014 to 64% in Vintage Year 2020.

ORS continues to monitor the increasing numbers of non-residential customers that elect to opt-out of the Company's programs. The Company has responded by creating an additional opt-in window during the first week of March in each year, and also by adding additional programs targeted toward these customers, such as the EWfB program.

## Rate Evaluation

The Rider 12 rates approved for 2021 and the Rider 13 rates requested for 2022 are shown below in Table 5.

**Table 5: Comparison of Current and Requested Rates**

<u>DSM/EE Rider</u>	<u>Approved Rider 12 Rate</u> (¢/kWh)	<u>Requested Rider 13 Rate</u> (¢/kWh)	<u>Change to Rider 12 Rate</u> (¢/kWh)
Residential	0.6878	0.5769	-0.1109
Non-Residential	0.6788	0.7705	0.0917

The requested change in the DSM/EE Rate Rider for an average residential customer using 1,000 kWh per month will reduce the customer's monthly bill by approximately \$1.11. The Rider 13 non-residential rate is approximately 13% higher than the Rider 12 rate.

The requested Residential Rider would apply to all residential customers. However, due to the non-residential opt-out provision, the requested Non-Residential Riders apply only to those non-residential customers that have elected to participate in the Vintage Year 2022 programs.

Because eligible non-residential customers have the ability to opt-out of either the DSM or EE programs, and can do so by vintage, the Company has developed separate non-residential rates for DSM and EE participants of each vintage. The non-residential rate shown above in Table 5 is the total rate that would be paid by non-residential customers that do not opt-out of any vintage for either the DSM or the EE programs.

## Conclusion and Recommendation

The non-residential EWfB and non-residential ITEE Programs have not passed cost effectiveness testing and ORS recommends the Company monitor these programs closely and incorporate the necessary changes to improve their cost-effectiveness.

ORS finds that the updated DSM/EE Rate Riders were developed in accordance with the terms and conditions set forth by the Commission and are based on reasonable estimates

of participation in the Company's DSM/EE programs. ORS recommends the approval of the Company's requested Rider 13 rates as proposed in their Application.

**ORS.SC.GOV**

Office of Regulatory Staff

1401 Main Street

Suite 900

Columbia, SC 29201



**Revenues and Billing Factors**  
**Rider 13**

<u>Residential Rider</u>	<u>Revenue Requirement</u>
<u>True-Ups:</u>	
Cost to be Recovered for Vintage 2017 True-Up	(\$99,632)
Cost to be Recovered for Vintage 2018 True-Up	(\$228,271)
Cost to be Recovered for Vintage 2019 True-Up	\$16,663
Cost to be Recovered for Vintage 2020 True-Up	\$3,085,624
Total True-Ups	\$2,774,384
<u>Lost Revenues:</u>	
Vintage Year 2019, year four Lost Revenues (one-half year)	\$1,900,781
Vintage Year 2020, year three Lost Revenues	\$2,409,773
Vintage Year 2021, year two Lost Revenues	\$2,355,565
Vintage Year 2022, year one Lost Revenues	\$7,452,684
Total Lost Revenues	\$14,118,803
<u>Prospective Amounts:</u>	
Costs to be Recovered for Vintage 2022	\$21,036,042
Existing DSM Program Revenue Requirement	\$360,261
Less: Costs to be recovered through solar access fee	(\$554,864)
Total Prospective Amounts	\$20,841,439
<u>Total Revenue Requirement - Residential</u>	\$37,734,625
Projected SC Residential Sales for the rate period (kWh)	6,540,330,420
Total Revenue Requirement for Residential (cents per kWh)	<b>0.5769</b>

<u>Non-Residential Riders</u>	<u>Revenue Requirement</u>	<u>Sales to Participants (kWh)</u>	<u>Rate Rider</u>
<u>True-Ups</u>			
Cost to be Recovered for Vintage Year 2016 True-Up - Vintage Year 2017 EE Participant	\$343,823	5,467,857,312	<b>0.0063</b>
Cost to be Recovered for Vintage Year 2016 True-Up - Vintage Year 2017 DSM Participant	(\$47,421)	6,214,045,053	<b>(0.0008)</b>
Cost to be Recovered for Vintage Year 2017 True-Up - Vintage Year 2018 EE Participant	\$1,750,292	5,362,845,935	<b>0.0326</b>
Cost to be Recovered for Vintage Year 2017 True-Up - Vintage Year 2018 DSM Participant	\$263,580	6,256,027,575	<b>0.0042</b>
Cost to be Recovered for Vintage Year 2018 True-Up - Vintage Year 2019 EE Participant	\$1,722,110	5,362,845,935	<b>0.0321</b>
Cost to be Recovered for Vintage Year 2018 True-Up - Vintage Year 2019 DSM Participant	(\$142,590)	6,254,126,751	<b>(0.0023)</b>
Cost to be Recovered for Vintage Year 2019 True-Up - Vintage Year 2020 EE Participant	(\$3,697,660)	5,304,825,796	<b>(0.0697)</b>
Cost to be Recovered for Vintage Year 2019 True-Up - Vintage Year 2020 DSM Participant	(\$19,142)	6,254,126,751	<b>(0.0003)</b>
Total True-Ups	\$172,992		
<u>Lost Revenues</u>			
Vintage Year 2019, year four Lost Revenues - EE Participants (one-half year)	\$1,525,734	5,362,845,935	<b>0.0285</b>
Vintage Year 2020, year three Lost Revenues - EE Participants	\$2,751,070	5,304,825,796	<b>0.0519</b>
Vintage Year 2021, year two Lost Revenues - EE Participants	\$4,194,740	5,318,242,897	<b>0.0789</b>
Vintage Year 2022, year one Lost Revenues - EE Participants	\$2,699,543	5,318,242,897	<b>0.0508</b>
Total Lost Revenue	\$11,171,087		
<u>Prospective Amounts:</u>			
Costs to be Recovered for Vintage Year 2022 - EE Participant	\$22,572,099	5,318,242,897	<b>0.4244</b>
Costs to be Recovered for Vintage Year 2022 - DSM Participant	\$7,826,427	6,254,963,836	<b>0.1339</b>
Existing DSM Program Revenue Requirement	\$551,299		
Total Prospective Amounts	\$30,949,825		
<u>Total Revenue Requirement - Non-Residential</u>	\$42,293,907		<b>0.7705</b>
<u>Grand Total Revenue Requirements</u>	\$80,028,532		